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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/540,646	03/31/2000	Hiroshi Tomiyasu	HAG 128	1768

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Cook Alex McFarron Manzo Cummings & Mehler LTD
200 West Adams Street
Suite 2850
Chicago, IL 60606

EXAMINER

RICKMAN, HOLLY C

ART UNIT PAPER NUMBER

1773

DATE MAILED: 06/03/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/540,646

Applicant(s)

TOMIYASU ET AL.

Examiner

Holly Rickman

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 March 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) See Continuation Sheet is/are pending in the application.
- 4a) Of the above claim(s) 20-25 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,5,6,11,12,14-19 and 74-79 is/are rejected.
- 7) ☒ Claim(s) 3,4,7,9,10,29,31,34,36,39,41,43,45,47,49,51,53,56,58,60,62,64,66,68 and 70 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____.

Continuation of Disposition of Claims: Claims pending in the application are 1,3-7,9-25,29,31,34,36,39,41,43,45,47,49,51,53,56,58,60,62,64,66,68,70 and 74-79.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The rejection of claims 8 and 18 under 35 U.S.C. 112, second paragraph, is withdrawn in view of Applicant's amendments.

Claim Rejections - 35 USC § 102

2. The rejection of claims 1 and 5-6 under 35 U.S.C. 102(e) as being anticipated by Kanbe et al. (US 6403240) is withdrawn in view of Applicant's amendments.
3. The rejection of claims 11-14 and 74-77 under 35 U.S.C. 102(e) as being anticipated by Chen et al. (US 6562488) is withdrawn in view of Applicant's perfection of a foreign priority date.
4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 11-12, 14-17, and 75 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Lee et al. (IEEE Trans Magn, Col. 31, no. 6, Nov. 1995, pp. 2728-2730).

Lee et al. disclose a magnetic recording medium having a substrate a multi-layered underlayer structure formed from alternating layers of NiAl and Cr deposited on the substrate and a magnetic layer thereon. One example of the inventive structure has

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the following underlayer structure: NiAl/Cr/NiAl/ Cr wherein the NiAl layers correspond to the claimed nonmagnetic layers, the first Cr layer corresponds to the claimed intermediate layer and the second Cr layer corresponds to the claimed "under film." See Table II, specimen D.

Claim Rejections - 35 USC § 102/103

6. The rejection of claims 1, 7-10 and 72 under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Ishikawa et al. (US 6057021) is withdrawn in view of Applicant's amendments.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. The rejection of claims 2, 28, and 33 under 35 U.S.C. 103(a) as being unpatentable over Kanbe et al. (US 6403240) is withdrawn in view of the cancellation of these claims.

9. Claims 1 and 5-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kanbe et al. (US 6403240).

Kanbe et al. disclose a magnetic recording medium having a substrate, a Cr underlayer containing Ti, Mo, V, and/or Ta and further containing C and a magnetic layer

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disposed thereon. The reference discloses an embodiment wherein the Cr-based underlayer contains approximately 15 at% of an additive element such as V (see col. 18, Table 4).

Kanbe et al. teach all of the limitations of the claims as set forth above, except for the claimed amount of carbon in the CrC-containing layer. Kanbe et al. teach that adding an element such as C to a CrTi underlayer results in an underlayer having fine and uniform grain size (col. 5, lines 26-35).

It would have been obvious to one of ordinary skill in the art at the time of invention to determine the optimal amount of C to add to the CrTi alloy used by Kanbe et al. in order to achieve optimal grain size and uniformity. Such an optimization would have been obvious because it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

10. Claims 18-19, 74, and 76-79 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee et al. (IEEE Trans Magn, Col. 31, no. 6, Nov. 1995, pp. 2728-2730).

Lee et al. disclose a magnetic recording medium having a substrate a multi-layered underlayer structure formed from alternating layers of NiAl and Cr deposited on the substrate and a magnetic layer thereon. The reference fail to disclose the claimed range of 100-550 Angstroms for the thickness of the nonmagnetic layers. However, the reference clearly teaches that the thickness of the NiAl layers affect the coercivity. The reference gives several examples in Figure 3 wherein the thickness of the NiAl layer is

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within the claimed range (i.e., 25 nm for example). It would have been obvious to one of ordinary skill in the art at the time of invention to choose a suitable thickness for the NiAl layers, such as 25 nm, based on the desired coercivity of the recording medium.

It has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Allowable Subject Matter

11. Claims 3-4, 7, 9-10, 29, 31, 34, 36, 39, 41, 43, 45, 47, 49, 51, 53, 56, 58, 60, 62, 64, 66, 68, and 70 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The prior art fails to teach or suggest the claimed recording medium including a CrC layer containing Mn.

Response to Arguments

12. Applicant's arguments filed 3/10/05 have been fully considered but they are not persuasive with respect to the Kanbe et al. reference as applied to claim 2 under 35 USC 103. Applicant argues that claims 2, 28 and 33 have been canceled to overcome the 103 rejection of these claims as being unpatentable over Kanbe et al. However, claim 1 was amended to include the limitations of claim 2. Thus, the rejection of claim 2 under 35 USC 103 in view of Kanbe et al. is now applicable to claim 1. Applicant has not set forth any arguments in response to the examiner's position that the subject matter of claim 2 is obvious in view of Kanbe. Thus, this rejection has been set forth above.

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13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Holly Rickman whose telephone number is (571) 272-1514. The examiner can normally be reached on Monday-Friday 9:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carol Chaney can be reached on (571) 272-1284. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read "Holly Rickman", with a stylized flourish at the end.

Holly Rickman
Primary Examiner
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